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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/084,284

02/26/2002

Hycon-Su An

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11/28/2003

EXAMINER

LUU, THANH X

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ART UNIT

PAPER NUMBER

2878

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,284	AN, HYEON-SU	
	Examiner	Art Unit	
	Thanh X Luu	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the array of multiple photo detecting sensors for receiving reflected rays from the wafer; an embodiment having an array of luminous emitters and an array of luminous emitters on the front and back side must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 2-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear to one of ordinary skill in the art how to make an array of multiple photo

detecting sensors that is disposed opposite to an array of emitters, receives reflected rays from the wafer to detect a wafer position. As understood, the wafer acts to block the emitters and the photo detecting sensors receive transmitted rays that are not blocked by the wafer.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Regarding claims 1-6, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

7. Claim 2 is objected to because of the following informalities:

In claim 2, it is unclear how a wafer rotator is related to the rest of the invention. Further, it is also unclear how the emitters and the incident rays are related to the reflected rays.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al (U.S. Patent 6,062,084).

Regarding claims 7-9, Chang et al. disclose (see Figures 1 and 2) a multi-functional wafer aligner, comprising: a rotatable rotation chuck (42), adapted to receive a semiconductor wafer; a wafer transfer unit (30), adapted to position the wafer upon the rotation chuck; a sensor body (40), comprising: a position compensator and a wafer damage detector (see Figures 4 and 5); wherein the sensor body is disposed relation to the rotation chuck so as to receive an edge of the wafer within the position compensator (see Figures 4 and 5). Chang et al. also disclose (see Figure 5) a luminous source (62) disposed on a first side of the edge of the wafer; and a photodetector (64) disposed upon an opposing side of the edge of the wafer as claimed. Chang et al. further disclose (see Figure 5) a luminous source (62) disposed on a first side of the wafer edge ; and a damage-detecting array of sensors (64, 68) adapted to receive light emitted from the luminous source that is reflected off of the wafer edge.

10. Claims 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Okawa et al. (U.S. Patent 5,851,102).

Regarding claims 7-9, Okawa et al. disclose (see Figure 1) a multi-functional wafer aligner, comprising: a rotatable rotation chuck (1), adapted to receive a semiconductor wafer; a wafer transfer unit (7), adapted to position the wafer upon the rotation chuck; a sensor body (at 5), comprising: a position compensator (5) and a wafer damage detector (laser inspection device; not shown); wherein the sensor body is disposed relation to the rotation chuck so as to receive an edge of the wafer within the position compensator. Okawa et al. also disclose (see Figure 1) a luminous source (51)

disposed on a first side of the edge of the wafer; and a photodetector (52) disposed upon an opposing side of the edge of the wafer as claimed.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al.

Regarding claim 1, Chang et al. disclose (see Figures 1 and 2) a multi-functional wafer aligner, comprising: a multi-functional unit (10) performing a wafer centering operation, a wafer flat zone alignment, and a wafer damage detection (see also column 5, lines 35-55); and a main processor (20) deciding positions of the wafer centering operation and the wafer flat zone alignment and discriminating wafer damage by calculating a signal inputted from the multi-functional unit. Chang et al. do not specifically disclose an accumulated digital signal. However, Chang et al. do teach a microprocessor. Further, it is well known that digital microprocessors are more robust to noise than analog devices. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an accumulated digital signal in the apparatus of Chang et al. to obtain improved operation through more noise resilient digital signals.

Regarding claim 10, Chang et al. disclose (see column 5, lines 35-55) a method, comprising: providing a luminous source (see Figure 5) on a first side of an edge of a wafer; providing a photodetector (64) on an opposing side, providing a damage-detecting array of sensors (64, 68); rotating the wafer and inspecting for damage by examining light received by the damage-detecting array of sensors. Chang et al. do not specifically disclose determining the position of the wafer by examination of light received by the photodetector. However, it is well known in the art to provide non-contact position detection through a photodetector. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such a position detection step in the apparatus of Chang et al. to consolidate photodetectors and reduce potential contact damage to the wafer.

Allowable Subject Matter

13. Claims 2-6 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the 112 rejections and in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta, can be reached on (703) 308-4852. The fax phone number for the organization where the application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
November 19, 2003


Thanh X. Luu
Patent Examiner